

particular in the zone (7) constituting the base wall,], when in an open position constitutes a chute (7, 9) onto which the caps by their own weight shall drop from the closing device (4).

7. (amended) ~~{System}~~ The system as claimed in ~~{one of the above claims, characterized in that}~~ claim 1, wherein the blower (5) is a centrifugal blower.

8. (amended) ~~{System}~~ The system as claimed in ~~{one of the above claims, characterized in that}~~ claim 1, wherein a filter (3) is mounted between the collecting container (2) and the blower (5) and ~~{in that}~~ wherein said filter ~~{preferably}~~ exhibits a pore size to achieve a separation rate of about 95 [%]% for particles with a size of 0.2 μm .

9. (amended) ~~{System}~~ The system as claimed in ~~{one of the above claims, characterized in that}~~ claim 8, wherein the filter (3) ~~{can be mounted in the form of}~~ is a filter cartridge disposed at ~~{the}~~ a suction side of the blower (5).

10. (amended) A method for operating a ~~{system as claimed in one of the above claims, comprising the following steps:}~~ suction system for test vials, said system comprising a suction duct (1), a partial-vacuum space constituting a collecting container (2), and a blower (5) generating a partial vacuum in the collecting container (2) during its operation, said collecting container comprises a closing device (4) at its lower side, the method comprising the steps of:

~~{--}~~starting the blower (5) to produce a partial vacuum in the collecting container (2)~~{,}~~;
~~{--}~~aspirating a number of caps and collecting the caps in the collecting container (2)~~{,}~~;
~~{where}~~ shutting off the blower (5) ~~{is shut OFF}~~ to empty the collecting container (2);
and ~~{next}~~,

pivoting the closing device (4) ~~{is pivoted}~~ under the weight of the caps into its open position, the caps dropping from the closing device (4), which thereupon is pivoted by ~~{the}~~ a counterweight (13) at least almost into its closed position.

11. (amended) ~~{Method}~~ The method as claimed in claim 10, ~~{characterized in that}~~

wherein, following ~~{said}~~ emptying of the collecting container, the blower (5) is again ~~{is}~~ turned ~~{ON}~~ on and the closing device (4) is forced by the partial vacuum into its closed position.

12. (amended) ~~{System and method as claimed in one of the above claims, characterized}~~ The system according to claim 1, wherein in that the system is part of an automated opening apparatus for human or animal fluid samples.

IN THE ABSTRACT:

The Abstract of the Disclosure has been amended as follows:

ABSTRACT OF THE DISCLOSURE

An aspirating ~~{The invention relates to a suction}~~ system for caps of sample containers ~~{and comprising}~~ including a suction duct ~~{1}~~, a partial-vacuum space ~~{constituting}~~ formed by a collecting container ~~{2}~~, ~~{further}~~ and a blower ~~{5 which}~~. The blower, when ~~{operating}~~ operated, produces a partial vacuum in the collecting container ~~{2, said}~~. The container ~~{2 being}~~ is fitted at its lower side with a closing device ~~{4}~~.

~~Fig. 1}~~.

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CAP ASPIRATING SYSTEM.

BACKGROUND OF THE INVENTION

[0001] The present invention relates to an aspirating system for caps of sample containers. Such aspirating systems illustratively are used in automated apparatus opening blood sample containers. Blood samples or other body fluids to be analyzed are, in general, contained in glass or plastic tubes sealed by a rubber stop or a screw cap. These sample containers are placed in a conveyor chain and are individually-opened by a gripper, which simultaneously exerts a rotating and pulling motion. The sealing cap/stopper removed in this manner from the sample container is aspirated away and put into a collecting container. The suction system provided for this purpose is substantially the same in concept as industrial suction systems known as vacuum cleaners where a blower is mounted on a reservoir and the suction hookup is connected to the opening device. A blood sample handling system of this kind is known from the German patent document DE 195 17 439.9.

[0002] Also, suction systems operating with compressed-air injectors are known for the same purpose. On one hand, such an apparatus requires large quantities of compressed air and, on the other hand, all the compressed air must be filtered to remove aerosols from it. Accordingly, equipment costs and scope are very extensive.

[0003] The pertinent state of the art incurs the drawback that, on one hand, its suction systems are bulky and, because of the high motor power, also relatively loud and, on the other hand, and precisely with respect to blood samples and other medical samples, filtering can be carried out only insufficiently. Lastly, the known practical suction systems incur the difficulty that the entire collecting container, which at the same time also supports the blower, must be removed from the apparatus when being emptied, as a result of which the serial, automated opening procedure must be interrupted.